DOCUMENT RESUME

ED 162 857 SE 025 311

AUTHOR Visco, Louis J.
TITLE A Study of Values and Their Relation to Course Selection and Success at the High School Level.
PUB DATE 78
NOTE 27p.; Paper presented at the annual meeting of the National Association for Research in Science Teaching (51st, Toronto, Canada, March 31-April 2, 1978); Contains occasional marginal legibility

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Academic Achievement; Courses; Educational Research; Grades (Scholastic); *High School Students; *Perception; Personal Values; Science Course Improvement Project; *Science Education; Secondary Education; *Values
IDENTIFIERS Research Reports

ABSTRACT

This study investigates the interaction between student values and values relevant for certain courses. The objective is to show how disparities between the value systems of students successfully completing three high school courses and those perceived by students electing the courses are related to course selection and academic success. The three courses used are: Project Physics, Man-Made-World, and Humanities. A higher degree of similarity is found between the perceived value systems of tenth-grade-students electing a course and those held by eleventh-grade-students who have successfully completed the course, than with courses not elected. The high degree of similarity permits a determination of student values match scores, by comparing a student's perceived values system with the median values system of successful students in the elected course. The determination of student values match scores makes it possible to compare them with the academic scores that students obtain in the elected courses. It was found that a positive association exists between the degree of values match and academic grade obtained in the elected course. (Author/HM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED162857

A STUDY OF VALUES AND THEIR RELATION TO COURSE SELECTION AND SUCCESS AT THE HIGH SCHOOL LEVEL

By

LOUIS J. VISCO

RUTGERS

THE STATE UNIVERSITY OF NEW JERSEY

NEW BRUNSWICK, NEW JERSEY

JANUARY, 1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Louis J. Visco

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

SE 025 311

A STUDY OF VALUES AND THEIR RELATION TO COURSE SELECTION AND SUCCESS AT THE HIGH SCHOOL LEVEL

Louis J. Visco
Rutgers University

ABSTRACT

Eleventh grade students completing Project Physics, Man-Made-World, and Humanities courses completed the Rokeach Value Survey, ranking the terminal and instrumental values in their order of importance to themselves. It is found that different value ranking patterns are associated with successful students in each of the courses as well as between successful and unsuccessful students within each course. These differences enable the identification of a cluster of course values, operationally defining the value patterns of successful students. Tenth grade students electing Project Physics, Man-Made-World, and Humanities courses completed the Value Survey, ranking the values in the order they thought a student successfully completing the elected course would emphasize them. A higher degree of similarity is found between the value ranking patterns that students perceive who are electing a course and those held by successful students who are completing the elected course, then with those of courses not

elected. This high degree of similarity permits a determination of student values match scores, by comparing a student's perceived ranking pattern with median ranking pattern of successful students in the elected course. The determination of student values match scores makes it possible to compare them with the academic grades that students obtain in the elected courses. It is found that a high positive association exists between the degree of values match and academic grade in the elected course.

THE PURPOSE of the study is to identify the value patterns of successful students in three different courses at the high school level and to determine if values matching may be useful in predicting student success. The objective is to show how any disparities between the value patterns of students successfully completing these courses and those perceived by students electing them are related to course selection and academic success.

Procedure Used

Rokeach's study of the nature of values is taken as a starting point in establishing definitions, boundaries, and method of assessment, (The Value Survey). (5) The nature of the present study made it necessary to divide the sample into two groups. Group 1: Students completing Project Physics, Man-Made-World, and Humanities courses chosen from a junior class of 272. Group 2: Students in 10th grade Biology electing Project Physics, Man-Made-World, or Humanities courses the following semester chosen from a sophomore class of 290.

Analysis of variance at the .05 confidence level indicates there is no significant differences between the groups due to I.Q., or class rank. (8) The 11th grade students (Group 1) were asked to take the Value Survey, ranking the values from their own point of view. Median rankings of successful students are used to establish a cluster of significantly different values to represent course values for Project Physics, Man-Made-World, and Humanities. The 10th grade students, (Group 2) were asked to take the Value Survey, ranking the values as they perceived a student who had successfully completed the elected course would.

Rokeach found that the frequency distributions of rankings obtained for the 18 terminal and 18 instrumental values in his National Value Survey of 1968 showed little normality. (5) He found it difficult to find one out of the 36 values which was normally distributed. It therefore becomes necessary to utilize nonparametric statistical tests when working with the data provided by the Value Survey. In this study the Kruskal-Wallis test is used to compare the value patterns of successful Project Physics, Man-Made-World, and Humanities students, while the Mann-Whitney test is used to compare the value patterns of successful and unsuccessful students within these courses. (7) The Spearman Rank Order Coefficient is used to measure the degree of association between the perceived rankings of values of students electing courses and the established value patterns of successful students completing the elected course. The degree of match

between perceived and course value patterns is then correlated with the academic grade obtained using the Pearson Correlation Coefficient. (11)

Description of the Instrument

The Value Survey (5) was developed to investigate differences and similarities in the values and value systems of groups or individuals. The respondent is presented with previously constructed lists of terminal and instrumental values, and asked to rank them for importance. The lists of values are designed to be reasonably comprehensive and worded in a manner that will yield valid data. The ranking method assumes that it is not the absolute presence or absence of a value that is of interest but their relative ordering.

Definition of Terms

1. Value, Rokeach's definition is used: a value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence.
2. Values System, Rokeach's definition will also be used: a values system is an enduring organization of beliefs concerning preferable modes of conduct or end-states of existence along a continuum of relative importance.
3. Successful Student, a student who has received a grade of C or higher.

4. Course Values, median rankings of the 18 terminal and 18 instrumental values of the Value Survey obtained from the rankings of students who have successfully completed Project Physics, Man-Made-World, or Humanities courses.
5. Perceived Values, in explaining his definition of value Rokeach emphasizes that a value is a preference as well as a conception of the desirable. And what a person conceives to be desirable may apply either to himself or to others. It is therefore possible to obtain data concerning not only a person's own values but also those that a person might attribute to others, which shall be called perceived values in this study.

Findings

Analysis of previous research suggests that there may be significant differences between the value systems of students who choose different courses of study, and that such values differences may be related to academic success. (2) This study is an examination of the values and value systems of students in three high school courses which have very different content, methodology, and philosophy. The ultimate objective is to show how any disparities between the values and value systems of successful students and those perceived to be associated with success by students electing the course may be related to academic success.

The first question addressed is whether significant differences exist between the value systems of successful students in three different courses at the high school level; Project Physics, Man-Made-World, and Humanities. Using the Kruskal-Wallis one-way analysis of variance by ranks, the median rankings of seven instrumental values (Table 1) and seven terminal values (Table 2) are found to be significantly different at the .05 confidence level for students in these three different courses. These results, in which over a third of the 36 values are found to differ significantly, seem to indicate that the value ranking patterns of successful students in Project Physics, Man-Made-World, and Humanities are significantly different.

A search is also conducted for significant differences, in value systems within each of the courses, between those students who are successful and those who are not, (Tables 3 and 4). Using the Mann-Whitney test, approximately 35% of all values receive significantly different median rankings from successful and unsuccessful students within each of the courses considered. These significant differences enable the identification of a cluster of course values, operationally defining those values held by successful students, (Course Values).

The second major phase of investigation involves how closely students perceive the value patterns of courses that they have or have not elected, (Tables 5 and 6). It is pre-

TABLE 1

INSTRUMENTAL VALUES OF SUCCESSFUL STUDENTS [a]

Instrumental Values	Project Physics n = 44	Man-Made-World n = 40	Humanities n = 42	Significant Difference
1. Ambitious	10.90 (13)	8.66 (7)	9.66 (8)	7.11 [b]
2. Broadminded	5.10 (2)	7.33 (5)	9.75 (10)	7.61 [b]
3. Capable	10.87 (12)	11.00 (12)	10.00 (11)	0.06
4. Cheerful	10.49 (11)	10.50 (10)	11.00 (12)	0.41
5. Clean	16.75 (18)	16.33 (17)	12.62 (17)	3.20
6. Courageous	9.10 (8)	9.50 (8)	9.70 (9)	1.66
7. Forgiving	9.90 (10)	12.40 (15)	12.00 (14)	2.83
8. Helpful	6.55 (3)	8.00 (6)	8.70 (5)	4.31
9. Honest	3.38 (1)	3.66 (1)	5.73 (1)	2.29
10. Imaginative	8.87 (7)	10.66 (11)	8.66 (4)	6.55 [b]
11. Independent	6.65 (4)	6.33 (3)	11.33 (13)	7.49 [b]
12. Intellectual	12.87 (14)	11.10 (13)	7.00 (3)	7.63 [b]
13. Logical	12.90 (15)	11.20 (14)	9.00 (7)	6.62 [b]
14. Loving	6.90 (6)	5.25 (2)	6.00 (2)	0.94
15. Obedient	16.18 (17)	17.20 (18)	15.00 (18)	1.69
16. Polite	14.33 (16)	13.00 (16)	12.10 (15)	2.28
17. Responsible	6.70 (5)	7.25 (4)	8.88 (6)	1.27
18. Self-controlled	9.30 (9)	10.00 (9)	12.33 (16)	6.25 [b]

[a] Successful students in Project Physics, Man-Made-World, and Humanities ranked the values of the Values Survey in order of importance to themselves, (Spring, 1976). In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

[b] Kruskal-Wallis One-Way Analysis of Variance by Ranks, significant at the .05 confidence level.

TABLE 2

TERMINAL VALUES OF SUCCESSFUL STUDENTS [a]

Terminal Values	Project Physics n = 44	Man-Made-World n = 40	Humanities n = 42	Significant Difference
1. A comfortable life	14.37 (16)	11.80 (14)	10.00 (10)	7.52 [b]
2. An exciting life	10.87 (11)	7.66 (6)	7.00 (4)	8.60 [b]
3. A sense of accomplishment	10.37 (9)	7.00 (5)	10.60 (12)	6.88 [b]
4. A world at peace	10.50 (10)	10.66 (11)	11.50 (13)	2.08
5. A world of beauty	13.50 (14)	14.25 (16)	13.20 (16)	1.49
6. Equality	10.90 (12)	11.00 (12)	12.66 (14)	1.34
7. Family security	8.78 (8)	8.40 (8)	8.33 (8)	0.07
8. Freedom	5.24 (3)	8.25 (7)	5.66 (2)	7.17 [b]
9. Happiness	6.56 (6)	5.66 (3)	4.66 (1)	6.13 [b]
10. Inner harmony	4.64 (1)	8.66 (9)	7.15 (6)	8.60 [b]
11. Mature love	8.50 (7)	9.33 (10)	8.20 (7)	2.77
12. National security	16.52 (17)	16.33 (17)	16.60 (17)	0.84
13. Pleasure	12.50 (13)	11.10 (13)	10.33 (11)	2.00
14. Salvation	17.60 (18)	17.09 (18)	17.60 (18)	0.86
15. Self-respect	4.70 (2)	6.33 (4)	7.10 (5)	1.42
16. Social recognition	13.66 (15)	13.50 (15)	12.75 (15)	0.42
17. True friendship	5.40 (4)	5.50 (2)	6.25 (3)	1.13
18. Wisdom	6.30 (5)	4.75 (1)	8.75 (9)	8.16 [b]

[a] Successful students in Project Physics, Man-Made-World, and Humanities ranked the values of the Values Survey in order of importance to themselves, (Spring, 1976). In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

[b] Kruskal-Wallis One-Way Analysis of Variance by Ranks, significant at the .05 confidence level.

TABLE 3

INSTRUMENTAL VALUES WITHIN COURSES [a]

Instrumental Values	n = 44 Project Physics Succ.	n = 19 Project Physics Unsucc.	Sig. Diff.	n = 40 Man-Made-World Succ.	n = 14 Man-Made-World Unsucc.	Sig. Diff.	n = 42 Humanities Succ.	n = 18 Humanities Unsucc.	Sig. Diff.
1.Ambitious	10.90(13)	9.00(7)	b	8.66(7)	7.50(3.5)	b	9.66(8)	5.60(2.5)	b
2.Broadminded	5.10(2)	7.50(5)	-	7.33(5)	7.60(5.5)	-	9.75(10)	5.60(2.5)	b
3.Capable	10.87(12)	11.00(13)	-	11.00(12)	7.50(3.5)	b	8.66(4)	10.00(10)	b
4.Cheerful	10.49(11)	10.00(10.5)	-	10.50(10)	7.00(2)	b	11.00(12)	8.80(7)	b
5.Clean	16.75(18)	15.00(18)	-	16.33(17)	14.75(17)	-	12.62(17)	14.00(17)	-
6.Courageous	9.10(8)	9.50(8.5)	-	9.50(8)	10.60(10)	-	12.10(15)	10.25(12)	-
7.Forgiving	9.90(10)	7.50(5)	b	12.40(15)	11.00(11)	b	12.00(14)	12.25(15)	-
8.Helpful	6.55(3)	6.00(2)	-	8.00(6)	10.00(9)	-	8.70(5)	10.00(10)	b
9.Honest	3.38(1)	3.00(1)	-	3.66(1)	8.50(7)	b	5.73(1)	4.60(1)	-
10.Imaginative	8.87(7)	10.50(12)	b	10.66(11)	9.00(8)	-	10.00(11)	12.50(11)	-
11.Independent	6.65(4)	9.50(8.5)	b	6.33(3)	6.25(1)	-	11.33(13)	8.00(6)	b
12.Intellectual	12.87(14)	12.50(14.5)	-	11.10(13)	13.25(15)	-	7.00(3)	12.20(14)	b
13.Logical	12.90(15)	13.00(16.5)	-	11.20(14)	11.50(12)	-	9.00(7)	10.00(10)	-
14.Loving	6.90(6)	7.50(5)	-	5.25(2)	12.00(13)	b	6.00(2)	6.00(4)	-
15.Obedient	16.18(17)	13.00(16.5)	-	17.20(18)	16.30(18)	-	15.00(18)	15.80(18)	-
16.Polite	14.33(16)	10.00(10.5)	b	13.00(16)	13.30(16)	-	9.70(9)	11.50(13)	b
17.Responsible	6.70(5)	7.00(3)	-	7.25(4)	7.60(5.5)	-	8.88(6)	7.50(5)	-
18.Self-Controlled	9.30(9)	12.50(14.5)	b	10.00(9)	12.30(14)	b	12.33(16)	9.00(8)	b

[a] Median rankings for successful and unsuccessful students in Project Physics, Man-Made-World, and Humanities classes, (Spring, 1976). Instrumental Values that are significantly different, ([b]) within each of the classes. In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

[b] Mann-Whitney test, significant at the .05 confidence level.

TABLE 4

TERMINAL VALUES WITHIN COURSES [a]

Terminal Values	n = 44 Project Physics Succ.	n = 19 Project Physics Unsucc.	Sig. Diff.	n = 40 Man-Made-World Succ.	n = 14 Man-Made-World Unsucc.	Sig. Diff.	n = 42 Humanities Succ.	n = 18 Humanities Unsucc.	Sig. Diff.
1. A Comfortable Life	14.37(16)	10.00(11.5)	b	11.80(14)	10.00(11)	-	10.00(10)	7.00(5)	
2. An Exciting Life	10.87(11)	10.50(13)	-	7.60(6)	7.50(4)	-	8.33(8)	9.80(12)	
3. A Sense of Accomplishment	10.37(9)	13.00(15)	b	7.00(5)	8.50(6.5)	-	10.60(12)	9.00(10.5)	
4. A World at Peace	10.50(10)	9.50(10)	-	10.66(11)	11.10(14)	-	11.50(13)	9.00(10.5)	
5. A World of Beauty	13.50(14)	9.00(8.5)	b	14.25(16)	11.00(12.5)	b	13.20(16)	13.50(15)	
6. Equality	10.90(12)	9.00(8.5)	b	11.00(12)	11.00(12.5)	-	12.66(14)	12.40(14)	
7. Family Security	8.78(8)	6.50(4)	b	8.40(8)	12.50(16)	b	7.00(4)	6.60(4)	
8. Freedom	5.24(3)	5.00(2)	-	8.25(7)	7.00(3)	b	5.66(2)	5.60(2.5)	
9. Happiness	6.56(6)	4.50(1)	b	4.75(1)	5.75(2)	-	4.66(1)	5.50(1)	
10. Inner Harmony	4.64(1)	7.50(6)	b	8.66(9)	8.50(6.5)	-	7.15(6)	10.00(13)	
11. Mature Love	8.50(7)	10.00(11.5)	b	9.33(10)	8.75(8)	-	8.20(7)	8.60(8.5)	
12. National Security	16.52(17)	15.50(16.5)	-	16.33(17)	17.33(18)	-	16.60(17)	14.80(17)	
13. Pleasure	12.50(13)	11.50(14)	-	11.10(13)	9.60(10)	-	10.33(11)	8.60(8.5)	
14. Salvation	17.60(18)	17.50(18)	-	17.09(18)	17.25(17)	-	17.60(18)	17.25(18)	
15. Self-Respect	4.70(2)	6.00(3)	-	6.33(4)	9.25(9)	b	7.10(5)	7.75(6)	
16. Social Recognition	13.66(15)	15.50(16.5)	-	13.50(15)	12.25(15)	-	12.75(15)	13.80(16)	
17. True Friendship	5.40(4)	8.00(7)	b	5.50(2)	5.50(1)	-	6.25(3)	5.60(2.50)	
18. Wisdom	6.30(5)	7.00(5)	-	5.66(3)	8.15(5)	-	8.75(9)	8.00(7)	

[a] Median rankings for successful and unsuccessful students in Project Physics, Man-Made-World, and Humanities classes, (Spring, 1976). Terminal Values that are significantly different, (b) within each of the classes. In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

[b] Mann-Whitney test, significant at the .05 confidence level.

TABLE 5

TERMINAL VALUES - PERCEIVED VERSUS COURSE [a]

Terminal Values	Project Physics		Man-Made-World		Humanities	
	n = 74	n = 63	n = 56	n = 54	n = 89	n = 60
	Perceived	Course	Perceived	Course	Perceived	Course
1.A Comfortable Life	13.66(16)	14.37(16)	12.25(15)	11.80(14)	10.96(10)	10.00(10) [b]
2.An Exciting Life	11.64(14)	10.87(11)	7.64(4)	7.66(6)	8.80(8)	8.33(8)
3.A Sense of Accomplishment	11.20(11)	10.37(9)	7.25(3)	7.00(5)	11.11(11)	10.60(12)
4.A World at Peace	10.20(10)	10.50(10)	10.16(9)	10.66(11)	11.24(12)	11.50(13)
5.A World of Beauty	13.10(15)	13.50(14)	12.84(16)	14.25(16)	13.10(15)	13.20(16)
6.Equality	11.60(13)	10.90(12)	11.40(13)	11.00(12)	14.16(16)	12.66(14)
7.Family Security	9.20(8)	8.78(8)	8.48(6)	8.40(8)	8.33(7)	7.00(4)
8.Freedom	5.72(2)	5.24(3)	7.66(5)	8.25(7)	6.20(2)	5.66(2)
9.Happiness	6.80(5)	6.56(6)	6.20(1)	4.75(1)	4.07(1)	4.66(1)
10.Inner Harmony	5.60(1)	4.64(1)	9.25(8)	8.66(9)	6.70(3)	7.15(6)
11.Mature Love	7.48(7)	8.50(7)	11.35(12)	9.33(10)	8.16(5)	8.20(7)
12.National Security	16.48(17)	16.52(17)	13.70(18)	16.33(17)	14.98(17)	16.60(17)
13.Pleasure	11.32(12)	12.50(13)	11.66(14)	11.10(13)	11.96(13)	10.33(11)
14.Salvation	17.72(18)	17.60(18)	11.33(11)	17.09(18)	17.24(18)	17.60(18)
15.Self-Respect	5.84(3)	4.70(2)	6.50(2)	6.33(4)	7.52(4)	7.10(5)
16.Social Recognition	9.24(9)	13.66(15)	13.60(17)	13.50(15)	12.40(14)	12.75(15)
17.True Friendship	5.88(4)	5.40(4)	10.75(10)	5.50(2)	8.32(6)	6.25(3)
18.Wisdom	7.33(6)	6.30(5)	9.20(7)	5.66(3)	9.12(9)	8.75(9)

[a] Median rankings of terminal values for 11th grade successful students (course values) in the spring of 1976 and median rankings of 10th grade students (perceived values) electing Project Physics, Man-Made-World, or Humanities in the fall of 1976.

[b] In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

TABLE 6

INSTRUMENTAL VALUES - PERCEIVED VERSUS COURSE [a]

Instrumental Values	Project Physics		Man-Made-World		Humanities	
	n = 74	n = 63	n = 56	n = 54	n = 89	n = 60
	Perceived	- Course	Perceived	- Course	Perceived	- Course
1. Ambitious	11.66(13)	10.90(13)	7.33(5)	8.66(7)	6.72(4)	9.66(8) [b]
2. Broadminded	5.30(1)	5.10(2)	9.60(8)	7.33(5)	6.32(2)	9.75(10)
3. Capable	8.60(8)	10.87(12)	11.64(13)	11.00(12)	10.32(11)	8.66(4)
4. Cheerful	13.28(15)	10.49(11)	8.33(6)	10.50(10)	11.36(12)	11.00(12)
5. Clean	16.72(18)	16.75(18)	10.25(10)	16.33(17)	16.48(18)	12.62(17)
6. Courageous	10.60(12)	9.10(8)	6.50(4)	9.50(8)	8.28(6)	12.10(15)
7. Forgiving	12.80(14)	9.90(10)	11.80(14)	12.40(15)	11.40(13)	12.00(14)
8. Helpful	6.80(4)	6.55(3)	8.50(7)	8.00(6)	10.28(10)	8.70(5)
9. Honest	7.28(6)	3.38(1)	3.75(1)	3.66(1)	4.66(1)	5.73(1)
10. Imaginative	9.16(9)	8.87(7)	10.00(9)	10.66(11)	10.25(9)	10.00(11)
11. Independent	8.16(7)	6.55(4)	10.48(12)	6.33(3)	6.66(1)	11.33(13)
12. Intellectual	10.48(11)	12.87(14)	13.85(17)	11.10(13)	11.48(14)	7.00(3)
13. Logical	7.14(5)	12.90(15)	13.33(15)	11.20(14)	12.25(15)	9.00(7)
14. Loving	5.88(2)	6.90(6)	5.66(2)	5.25(2)	8.36(7)	6.00(2)
15. Obedient	15.80(17)	16.18(17)	16.56(18)	17.20(18)	15.24(17)	15.00(18)
16. Polite	14.16(16)	14.33(16)	13.75(16)	13.00(16)	13.42(16)	9.70(9)
17. Responsible	6.33(3)	6.70(5)	10.40(11)	7.25(4)	7.72(5)	8.88(6)
18. Self-Controlled	9.28(10)	9.30(9)	6.00(3)	10.00(9)	10.10(8)	12.33(16)

[a] Median rankings of instrumental values for 11th grade successful students (course values) in the spring of 1976 and median rankings of 10th grade students (perceived values) electing Project Physics, Man-Made-World, or Humanities in the fall of 1976.

[b] In each column the rank order of each median (low to high) is denoted by the number in parenthesis after the median.

dicted that higher degrees of similarity are to be found between the perceived median rankings of values and established course values for the elected course than those of courses not elected, (Table 7).

The success of this prediction, (Table 7), enables a comparison to be made between an individual student's perceived rankings of values and those of the elected course in order to establish a student values match score. In order to derive a values match score, each student's perceived rankings of the Value Survey were compared to the median course values of successful students in the elected course. For each instrumental and terminal value a values match score of 1 or 0 is obtained. If the perceived ranking is within $\pm$ 2 of the course ranking a one is assigned to that value; if greater than $\pm$ 2, a zero is assigned. The values match scores are summed to obtain a total values match score, for the purpose of correlating it to the academic grade obtained in the elected course. Total values match scores are also determined for ranges of $\pm$ 1 and $\pm$ 3. It is suggested that a higher degree of positive association is to be found between the degree of values match and academic grade, resulting in an ability to predict academic success based upon the extent to which a student correctly perceived the values patterns associated with success in the elected course. An examination of Table 8 indicates that high positive degrees of association are found between the degree of values match and academic success. In addition in 8 out of 9 instances the correlation coefficients of the instru-

PERCEIVED VERSUS COURSE VALUES - RANK ORDER CORRELATIONS [a]

Instrumental Values

Course Values

Perceived Values	Project Physics	Man-Made-World	Humanities
Project Physics	.76	.74	.62 [b]
Man-Made-World	.58	.72	.20
Humanities	.39	.50	.87

Terminal Values

Course Values

Perceived Values	Project Physics	Man-Made-World	Humanities
Project Physics	.94	.74	.80
Man-Made-World	.69	.89	.68
Humanities	.80	.79	.83

[a] Rank-order correlations of the median rankings of perceived and course values for students electing Project Physics, Man-Made-World, or Humanities in the fall of 1976.

[b] A high value of rho indicates a high degree of similarity between the average value systems. Test used is the Spearman Rank-Order Coefficient.

TABLE 8

VALUES MATCH SCORES VERSUS ACADEMIC SCORES [a]

Course	Value System		
	Instrumental Values		
	Range ± 1	Range ± 2	Range ± 3
Project Physics	r = +.71	r = +.71	r = +.72
Man-Made-World	r = +.71	r = +.71	r = +.73
Humanities	r = +.60	r = +.65	r = +.65
	Range ± 1	Range ± 2	Range ± 3
Project Physics	r = +.51	r = +.51	r = +.55
Man-Made-World	r = +.61	r = +.62	r = +.61
Humanities	r = +.62	r = +.64	r = +.63

[a] Correlations of student's values match scores and their academic scorse for courses they had elected in the Fall of 1976. Correlation coefficients are reported for three different ranges used in the determination of the student's values match scores.

[b] Test used is the Pearson Correlation Coefficient.

mental values are higher than those of the terminal values. These findings suggests that students who can correctly order their values, especially those values representing means to a goal such as academic success, are rewarded academically.

Summary

The fact that a number of academically talented high school students are turned off by science is particularly pertinent during this period of time when science and technology are such prominent forces in society. The need for literacy in science and technology is a prerequisite in helping to close the gap between the two cultures and safeguarding society from the possible misuse of scientific and technological knowledge. Many high school students who may later become professional leaders may never experience upper level high school science, but may have to make decisions involving scientific issues. Teachers are well aware that some students who have selected their course and seem to be well motivated do not do well. Perhaps a look at value systems and alertness to possible conflicts resulting from value mismatches will enable educators to provide guidance in the selection of courses.

Today's high school student is more active and vocal and less likely to accept a course that does not meet his needs. A successful course will only materialize when the needs of students are understood and satisfied. With decreases in the minimum requirements for graduation, stu-

dents now have the luxury of being selective in electing courses. Course enrollments are being affected more than ever by what students perceive a course to be like and whether it stands some chance of meeting their needs. If educators hope to turn the tide of decreasing science enrollments, prcvide a wide range of students with rewarding experiences, and close the gap between the two cultures, it may be necessary to pay closer attention to the perceptions that students have. Certainly, teachers should be alert to situations in which they and the course being offered have value mismatches with prospective students, even those students who are well-motivated and academically talented.

The present study views the classroom as a social organiztion, an open system, one that is related to and makes exchanges with its environment. The social psychological basis of such a social system are the role behaviors of its members, the norms (rules) prescribing and sanctioning these role behaviors, and the values in which norms are embedded. The network of role behaviors in the classroom constitute what may be called its formal structure in which the rules defining the expected interdependent behavior of students and teachers are spelled out. Students and teachers who conform to their role requirements are rewarded, while those who deviate are not. Role specification ensures that students and teachers within the classroom environment

engage in the repetitive activities that will yield predictable and desired results.

In order to conceptualize what is happening in the values match hypothesis, it is desirable to think of a continuum with students located at various points along it, with a particular location representing the degree of values match, (degree of match between perceived and course values). At one end of the continuum are those students whos values are matched closely to those of the elected course; therefore, the prediction is one of academic success. At this end students seem to be clear as to the relationship between themselves and the course that they have elected. These students seem to be able to deal with the elected course in a consistent and purposeful way and appear to know what they want and how to work for it. Although in somewhat different styles, most students at this end of the continuum apparently can deal with the course constructively and this results in academic success. The students at the other end of the continuum do not seem to be clear about how to relate to the things and individuals making up the elected courses environment in order to achieve success. Support for this model comes from the correlation coefficients presented in Table 7 (correlations between student's values match scores and their academic grades in elected courses).

Limitations:

It should be noted that the present study involved one high school and three courses within that school. Similar studies in different high schools involving elected courses

may reveal different results. In addition courses where teacher turnover is high may prevent the establishment of a distinctive set of course values. The values patterns reported by both students successfully completing courses and students electing courses may not reflect their out of class value priorities. Therefore, the study does not attempt to identify out of class value patterns, but rather those value patterns that are associated with academic success. The values that are involved are seen as being possessed by all students entering the elected courses: thus the study does not suggest that new values be learned or be imposed on individual students, but that students and teachers be aware of the priority ordering of existing values that are associated with successful students completing the elected course.

The way a student ranks values is seen as an important part of his cognitive style, with students within a group showing distinctive patterns in the priorities that they give when ranking values. Students in different courses have value patterns that are similar in certain respects but with sufficient differences to be distinguishable from each other. The present study has established that a relationship exists between the ranking of values and the prediction of academic success in three different courses at the high school level. It is left to other studies to determine whether values are related to other variables that are in some manner related to

course selection and success at the high school level, and whether the results of the present study are to be found in other high schools. The study has demonstrated the possibility of using the Value Survey as a device for predicting success in elected courses. The agreement with findings of other studies (1,2,3,4,5,6,9) indicates that the identification of value patterns is possible and is useful in applying the matching hypothesis. What remains to be done, is to develop a method for matching teachers and students in terms of relevant characteristics of each in order to maximize the effectiveness of teacher-student interactions in the learning process.

REFERENCES

1. Allport,G.W., Vernon,P.E., and Lindzey,G. A Study of Values. Boston: Houghton Mifflin, 1951.

2. Feather,N.T. Values in Education and Society. New York: The Free Press - MacMillan, 1975.

3. Handley,H.M., and Bledsoe,J.C. "The Personality Profiles of Influential Science Teachers, Regular Science Teachers, and Science Research Students," Journal of Research in Science Teaching, 5 (1968): 95 - 103.

4. Roe,A. "The Psychology of the Scientist," Science, 134 (1961): 456 - 459.

5. Rokeach,M. The Nature of Human Values. New York: The Free Press - MacMillan, 1973.

6. Rothman,A. "Teacher Characteristics and Student Learning," Journal of Research in Science Teaching, 6 (1969): 340 - 348.

7. Siegel,S. Nonparametric Statistics For the Behavioral Sciences. New York: McGraw-Hill, 1956.

8. Visco,L.J. "A Study of Values and their Relation to Course Selection and Success at the High School Level," An unpublished doctoral dissertation, Rutgers University, 1977.

9. Walberg,H.J. and Welch,W.W. "Personality Characteristics of Innovative Physics Teachers," Journal of Research in Science Teaching, 1 (1967).

10. Welch,W.W. "Review of the Research and Evaluation Program of Harvard Project Physics," Journal of Research in Science Teaching, 10 (1973): 365-378.

11. Winer,B.J. Statistical Principles in Experimental Design. New York: McGraw-Hill, 1962.